A YELLOW RACE OF *BACILLUS PSEUDARABINUS*, FROM THE QUINCE.

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Upon examining the bacterial flora of some branches of the Quince, several bacteria were obtained. With one exception these did not appear to be capable of forming slime on glucose-gelatine, levulose-asparagine-tannin-agar, or upon saccharose-potato-agar—three media which generally give indications of slime-formation. The exception was a bacterium which, upon the original plates, was in the great majority. It was an organism which upon certain media, *e.g.*, saccharose-potato-agar, appeared as cocco-bacteria, while in others, such as bouillon, it was seen to be stouter and longer. Upon most media there was evidence of slime-production, and especially was this the case with levulose-asparagine-tannin-agar, upon which *Bact. acaciæ* produces so much slime. The colonies upon glucose-gelatine were suggestive of *Bac. pseudarabinus** which had been isolated from the Sugar-Cane, but as the colonies had a buff tinge on gelatine and a decided yellow colour on agar, it was probably not that organism. An examination of the gum was necessary, however, before anything could be said definitely about it.

The gum was prepared in the manner that I have frequently described. Large plates of levulose-asparagine-tannin-agar were smeared with a culture of the organism, and the slime which grew upon the agar surfaces was removed and coagulated with alcohol. The coagulum was treated with water, warmed to expel the alcohol and then heated in the autoclave at a pressure of three atmospheres. This effected a liquefaction of the gum and at the

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same time a separation of the gum from the bacterial cells and coagulated albuminoids. The filtered solution of the gum was precipitated with alcohol, and the process was repeated until the gum mucilage was free from reducing sugars. The gum formed a thick mucilage with water and gave the reactions for arabin with the usual reagents. During the purification, it was noted that the slime was not so easily coagulated by alcohol as arabin. The mucilage was also thicker and rather more gelatinous than the mucilage made with a similar quantity of arabin and water. So far the gum was identical with that yielded by *Bac. pseud-arabinus.*

The gum was hydrolysed by boiling with 4 % sulphuric acid for eight hours, and the neutral solution of reducing substances was treated with phenylhydrazine-acetic acid mixture on the water-bath. The crude osazone was purified and subsequently recognised by its appearance and melting point as galactosazone. No arabinosazone could be detected. The gum was therefore a galactan.

When the organism was grown side by side with *Bac. pseud-arabinus*, the cultural characters of the two bacteria were seen to be identical, excepting that the cultures of the bacterium from the Sugar-Cane were always white and that from the Quince always yellow, varying from a pale buff on gelatine to a deep yellow on potato.

The bacillus probably has nothing to do with the production of the mucilage of the Quince. I have tested Quince-mucilage, and have found that it is coagulated with most reagents and that it is not hydrolysed when boiled with 5 % sulphuric acid for eight hours. Quince-mucilage is therefore quite different from this arabin-like galactan.

One frequently finds that certain organisms, obtained from natural sources, change colour upon cultivation within a few months. For example, among the water-bacteria many which are white when isolated become yellow under cultivation, and organisms originally producing red or violet colonies lose the power of forming colour. Among the slime or gum bacteria, I

have already shown that *Bac. levaniformans* exists as white and as yellow races, and that the latter change to the former in the laboratory.

Change of colour is therefore not uncommon, but permanent differences in colour production by the same organism are not so frequently found. Perhaps the best known examples are to be found among the micrococci. The pus-forming *Micrococcus pyogenes*, (Rosenberg) Mig., is recognised as probably being a permanently white race of *Micrococcus aureus*, (Rosenberg) Mig. The white and yellow races of *Bac. pseudarabinus* were obtained as such, and they have preserved their respective colours for a year under laboratory conditions.